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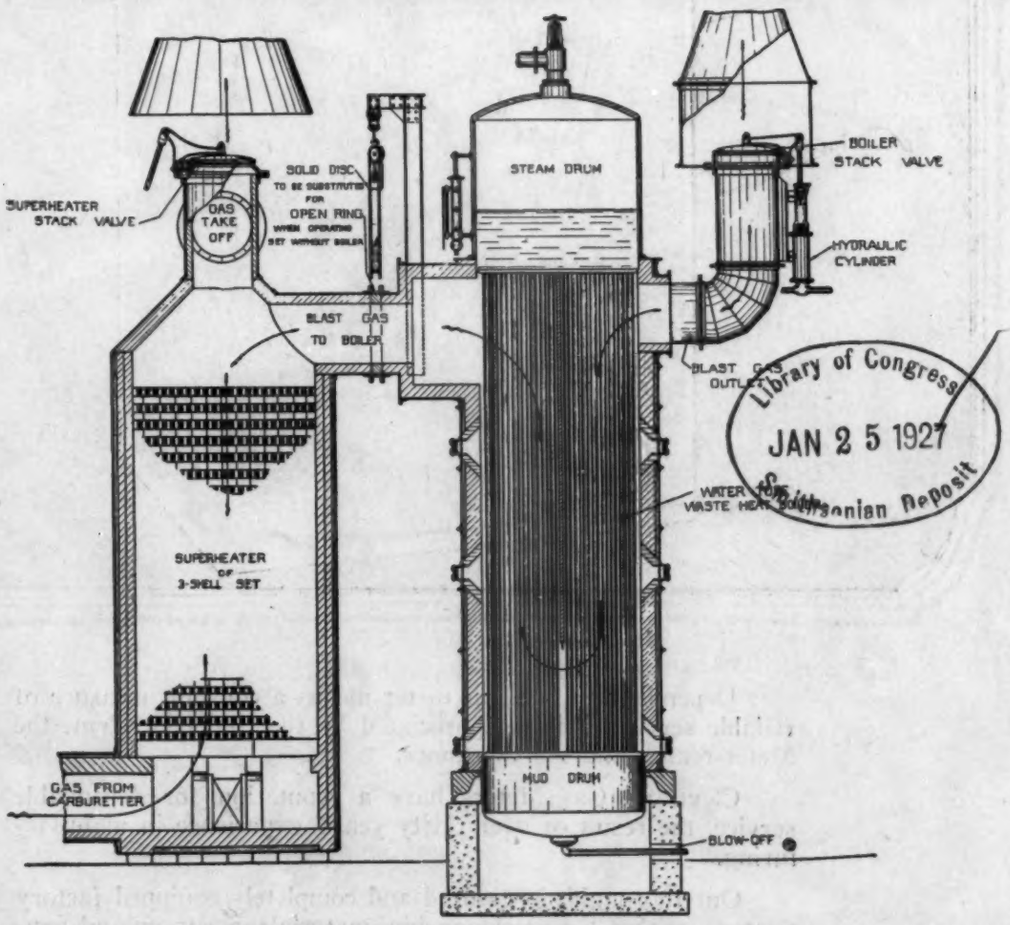

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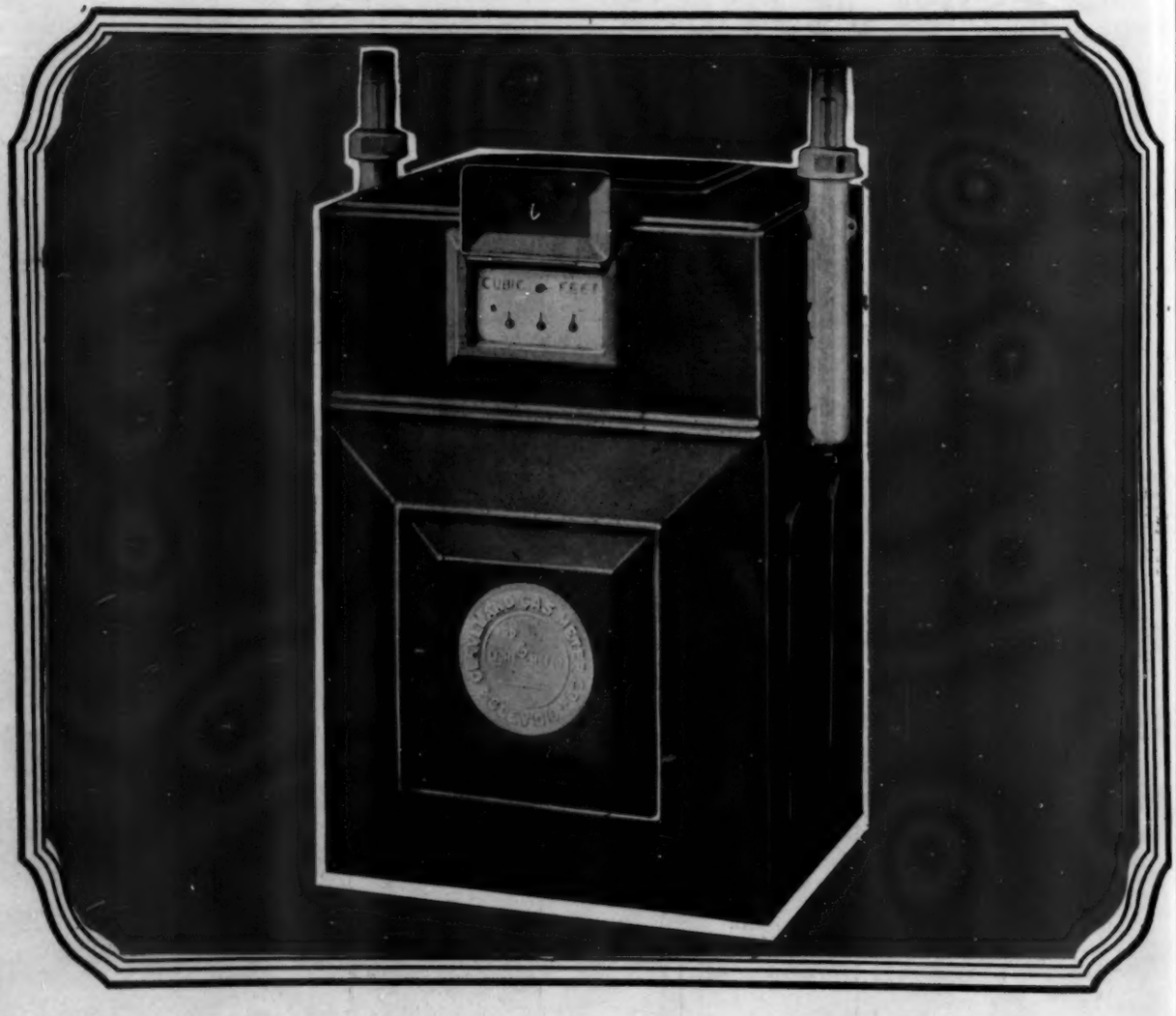

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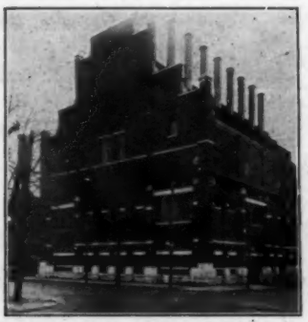

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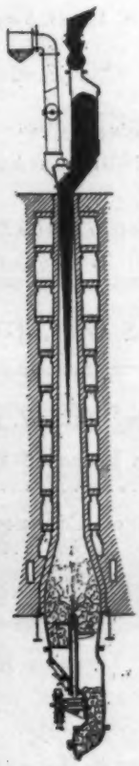

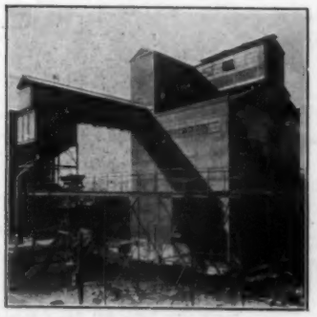

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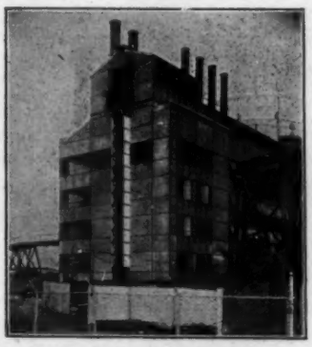

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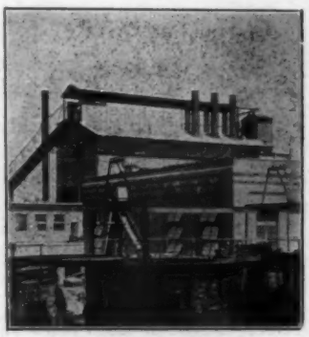

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American Gas Journal

SIXTY-SEVENTH YEAR

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Area of Gate Valve Openings

Graphic methods of calculating areas

C. W. Stevens

PRACTICALLY every gas engineer, at some time, runs up against the problem of ascertaining the area of the opening of a partially closed gate valve.

Restriction of gas or liquid flow in a pipe line often becomes necessary, and for many engineering reasons the knowledge of the area of the partly open valve would be very useful, particularly in estimating the flow through underground lines, where the installation of any metering device would be an expensive undertaking. Usually the breaking of the line for a metering device would be impossible due to interruption of gas flow.

The writer has used partially closed gate valves as orifices as a means of measuring the flow of gas with surprising success.

Another frequent use of this information is in designing gas lines to convey a certain quantity of gas, particularly by-pass lines; throttling a valve in a known line to the point where the gas passes a corresponding volume, and using the area of the opening of the valve as a check on other calculations.

Many uses could be made of gate valves in this way were the information as to areas readily available.

The object of this article is to set down the methods of obtaining these areas, and to derive a practical reference curve, from which values can be obtained without delay or without extensive calculations required to find such areas.

Simplest Method of Obtaining Area

The simplest method of obtaining the open area of the valve is to plot the circles of the pipe line and the valve gate to a small scale, superimposing one over the other the proper distance between centers; the same representing the height to which the valve was lifted, as indicated on the stem; see Fig. 1.

The depth of the depressed seat of the valve should be neglected, as it has no effect upon the flow of fluid through the pipe line, nor the drop in pressure across the open valve, unless the valve were barely opened. Under these conditions the open valve could not be used as an orifice, as too many eddy currents and restrictions would affect the normal flow.

By means of a planimeter, the area between the intersecting circles can be obtained, and by multiplying by the proper scale ratio, the true valve opening is derived.

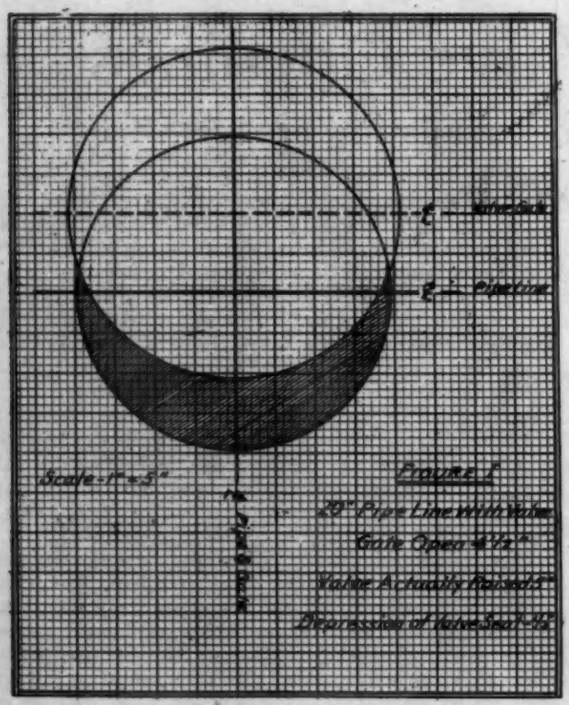
Practically all valves used in larger lines are of the gate type. The seat of the valve is depressed so that the diameter of the gate is larger than that of the pipe line. The depth of this depression varies with the size of the valve so that the diameter of the gate may exceed that of the pipe by from ½ inch to 3 inches.

The sizes of the valve gates, seat depressions, and other information can be obtained from the catalogues or handbooks of the manufacturing company The height to which the gate is raised must be obtained by noting the position of the exposed valve stem with the valve closed and then counting the additional exposed threads when the valve is opened, or measuring the rise in the stem. Where the valve is not of the exposed stem type, the valve should be opened and the turns of the wheel counted, from which, knowing the pitch of the screw on the spindle, the rise of the gate can be obtained. This pitch is also obtained from the manufacturers' catalogues. Care must be taken, for greater accuracy, to make proper allowances for loose play in the wheel so that only actual motion of the valve is measured. This can be done by noting when the wheel "takes hold."

Procedure When Planimeter Is Not Available

Usually, however, no planimeter is available. A very close approximation can then be obtained graphically by drawing the circles on cross-section paper and counting the number of small squares that lie between the two circles representing the valve opening. Multiply the total sum of the areas of these squares by the scale ratio and the resulting figure will be within a few per cent of the true area. The smaller the size of the squares, the greater the accuracy. By counting half squares and portions the error can be further diminished.

Figure 1 illustrates the simplicity of the determination of the open valve area by drawing to scale on cross-section paper. The 4 inch circle, representing a 20 inch line, has superimposed upon it a 4.2 inch circle representing the valve gate. The diameter of the gate is assumed as 1 inch larger than that of the pipe line. The gate, as indicated on the stem, has been raised 5 inches, which would be a rise of but 4½ inches above the pipe inside level, discounting the depression of ½ inch in the valve body.



The small 0.1 inch squares are counted, each of which are 0.01 square inches in actual measurement, but represent 0.25 square inches pipe area. The area sums up as follows:

Whole squares counted: 302 at 0.25 square inch equals 75.50 square inches pipe area.

Made up squares counted: 24 at 0.25 square inch equals 6.00 square inches pipe area.

Total squares counted: 326 at 0.25 square inch equals 81.50 square inches pipe area.

The mathematical formula for this calculation is lengthy, but when once solved for a given valve, or for given diameters, and the constants obtained, the substitution of various values render the calculation quite simple. The general method can be briefly described as follows:

On Fig. 2 the circle with center Cg represents the valve gate, which is raised the distance Cp to Cg above the circle whose center is Cp. When the valve is closed the two circles would be concentric.

The points of intersection of the two circles can be found by using the ordinary equations for the circle, then the areas of the segments can be obtained. The difference between the two segments represents the area of the valve opening.

Fig. 3 shows the valve but slightly open giving a different arrangement of the angles, but the solution is the same.

General Formula

The final general formula looks quite formidable, but in reality it is merely a matter of substitution. With no other method available, this formula would be very desirable.

$$\left[\frac{360-\text{angle MCpN}}{360}(\text{pi } r_1^2) + y\sqrt{r_1^2-y^2}\right] - \left[\frac{\text{Angle MCgN}}{360}(\text{pi } r_2^2) - (c-y)\sqrt{r_2^2-(c-y)^2}\right]$$

Where r_1 is radius of pipe.

Where r_2 is radius of valve gate.

Where c is height valve is raised.

Where y is height of intersection of circles above center of pipe.

AREA OF OPEN GATE VALVES

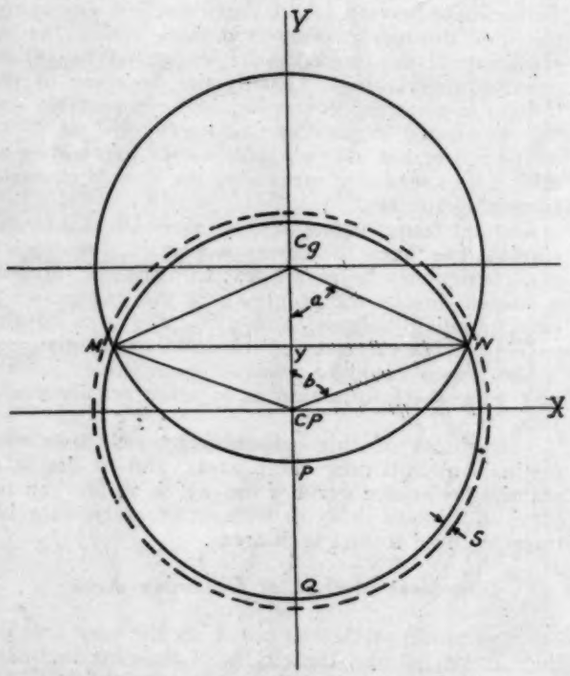


FIGURE II

The angles can easily be solved trigonometrically.

In the example used before, r=10 inches, r_2=10½ inches, c=5 inches, y=3.5 inches. Angle MCpN=138.7 deg. and angle MCgN=163.8 deg.

Substituting in the formula, we get

$$\left[\frac{360-138.7}{360}(3.14)(10^2)+3.5\sqrt{10^2-3.5^2}\right]-\left[\frac{163.8}{360}(3.14)(10.5^2)-\frac{(5-3.5)}{(\sqrt{(10.5)^2-(5-3.5)^2})}\right]$$

equals 82.5 square inches.

(Calculations were made with slide rule.)

AREA OF OPEN GATE VALVES

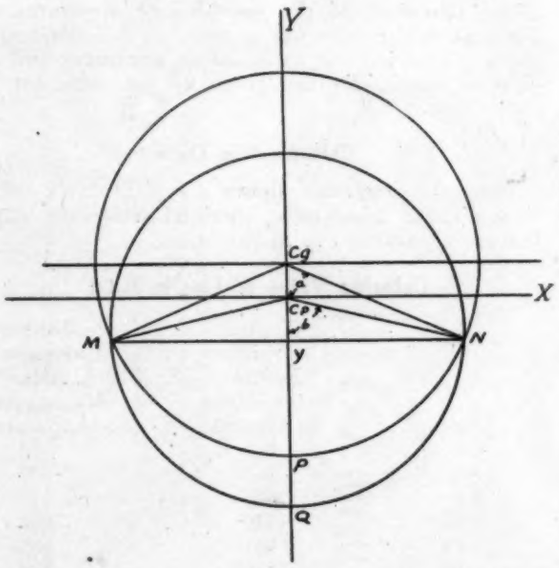
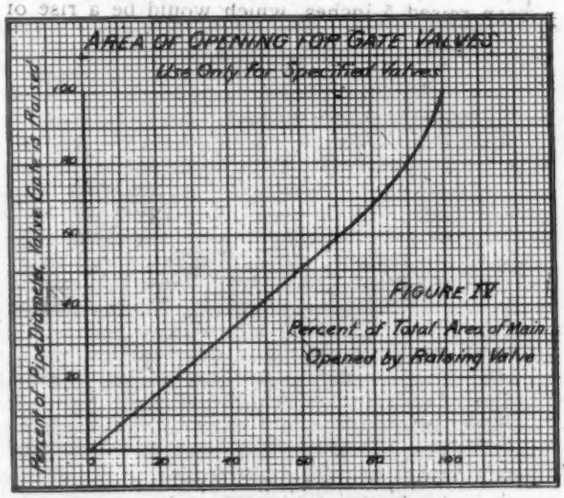


FIGURE III

The graphical method, by counting squares, gave an area of 81.5 square inches, an error of slightly over 1 per cent. The method by calculation is really quicker as well as more accurate.

Use of a Curve

Where numerous settings of a given valve or type of valve are made, the areas of the openings can be rapidly approximated by means of a curve, the plotting points of which can be obtained by the above method of calculation.


AREA OF OPENING FOR GATE VALVES
Use Only for Specified Valves
Percent of Pipe Diameter Valve Gate is Raised
Percent of Total Area of Main Opened by Raising Valve
FIGURE IV

Such a curve is shown on Fig. 4, which applies to a given valve. The points were calculated by means of the above formula and checked with a planimeter, which agreed very closely. The ordinates represent the height of valve as shown on the valve stem, in percentage of the total diameter of the pipe. The abscissae represent the percentage of the total internal area of the pipe that is open, that is, the lunar open valve area divided by the total area of the pipe.

By means of this curve, the open valve areas can be picked off instantly for any setting of the valve. There would be considerable error introduced, however, if one curve were used for all valves, particularly between large and small valves, where the difference in valve seat depression is so great.

The Effect of Naphthalene Removal Upon the Heating Value of Gas

A. A. Kohr

Chief Chemist, Seaboard By-Product Coke Co., Jersey City, New Jersey

THE purpose of this paper is to show the very small effect upon the heating value of a gas caused by removing the naphthalene and gum-forming constituents by the Koppers Company's new process. There are several ways in which this problem may be approached, but at present we will concern ourselves only with the direct determination of heating value of the gas. Tables will be given showing gas calorimetric determinations made entering and leaving the naphthalene apparatus. Such determinations would indicate any appreciable loss in heat value, and, in the last analysis, this is what the gas man is primarily interested in, a practical demonstration under actual operating conditions.

The Koppers Company's Naphthalene Apparatus

During the latter part of August, 1925, a naphthalene scrubbing unit was installed at the plant of the Seaboard By-Product Coke Company. This unit was built according to the latest design of the Koppers Company and incorporated many valuable features not heretofore used in connection with naphthalene removal. The Koppers Company process involves the scrubbing of gas with oil using a counter-current flow principle, modified so as to insure proper distribution of very small quantities of oil. The entering oil contains no naphthalene, and the effluent oil contains rather high concentrations of this substance. It has long been known that the removal of naphthalene from gas might be accomplished by scrubbing the gas with an oil containing little or no naphthalene. Conditions favorable to the removal of the naphthalene are likewise favorable to the removal of benzols, and in ordinary oil scrubbing a great deal more oil is used than is necessary for naphthalene removal. This results in a certain loss of heating value due to the extraction of benzols. This point was thoroughly appreciated by the Koppers Research Laboratories, and in the design of this apparatus every effort was made to keep the oil requirements at an absolute minimum. This is the secret of the success of the Koppers Company's apparatus. The oil requirements have been kept to an almost unbelievable minimum, making possible the very low losses in heating value encountered.

Oil Consumption At Seaboard

The Seaboard unit was started with fresh oil in the entire system, and for a brief period there was a noticeable loss in the heating value in the washed gas. After the oil had come into equilibrium with the benzols in the gas, the loss in heating value, due to the removal of naphthalene, has been less than the experimental error of good gas calorimetric work. We find that under summer conditions the use of a maximum of 25 gallons of oil per million cubic feet will reduce the naphthalene and gum-forming constituents to only a trace in the gas. During the winter when the temperatures prevailing are somewhat cooler the use of 5 gallons of oil per million cubic feet gives the same results. During the period of September and October an average of 19 gallons of oil per million cubic feet of gas were actually used. It can readily be seen that the use of such small quantities of oil should not cause any very decided reduction in the calorific value of the gas due to the absorption of benzols.

Description of Testing Equipment

The Seaboard plant is equipped with a Thomas Recording Gas Calorimeter. The gas sampling line to this equipment is taken off from the main gas stream just prior to the sulphur catch boxes. The gas contains approximately 20 grains H_2S per 100 cubic feet of gas. After passing through the sulphur catch boxes the gas is compressed to two pounds. It then passes through the naphthalene apparatus, and to a testing station located about a mile from the works. At this point average hourly samples of the gas are taken and the calorific value of the samples determined by means of a Junker calorimeter. The Thomas calorimeter sampling line contains a small purifier to remove all traces of H_2S from the gas before testing. Under ordinary conditions, and prior to the installation of the naphthalene apparatus, the results of the Thomas and Junker calorimeters would check as well as could be expected from two separate Junker installations. Since the start of the naphthalene apparatus the Thomas calorimeter has given us a reliable test of the gas entering the naphthalene apparatus and the Junker calorimeter has given us the same for the outlet gas.

Calorimetric Data

The following table shows a typical day's operation. These tests were obtained while the naphthalene apparatus was in operation.

Calorific Value of Gas in B.t.u.

Time	Thomas Calorimeter Before Naphthalene Apparatus	Junker Calorimeter After Naphthalene Apparatus
6-7	540	542
7-8	540	540
8-9	538	538
9-10	540	538
10-11	541	541
11-12	539	538
12-1	539	538
1-2	538	539
2-3	541	537
3-4	538	538
4-5	532	535
5-6	536	533
6-7	540	537
7-8	538	541
8-9	537	534
9-10	542	536
10-11	545	545
11-12	544	544
12-1	545	543
1-2	545	542
2-3	538	541
3-4	537	543
4-5	539	543
5-6	542	538
	Average 539.8	539.3

It will be noted from the above table that at no time is there an exceptional difference in B.t.u.'s as determined at the two stations. The slight difference that does exist from hour to hour is not greater than the experimental error generally encountered in such work, particularly so when it is borne in mind that although an attempt has been made to correct for the time lag between the two stations the samples taken at the two stations may not be representative of quite the same gas, due to this time factor.

In the following table are listed the averages of the hourly determinations, compiled by days over a month's period. The naphthalene content of the treated gas is also shown. It should be borne in mind that the figure reported as naphthalene represents both the naphthalene and gum-forming constituents, and that the true naphthalene content runs somewhat lower than the figure reported.

Day	Naphthalene Content Washed Gas. Grains Per 100 cu. ft.	Thomas Before Naphthalene Apparatus B.t.u.	Junker After Naphthalene Apparatus B.t.u.
1	5.1	540	541
2	5.9	540	542
3	3.2	539	544
4	3.3	536	540
5	3.1	537	538
6	2.9	539	540
7	3.8	539	542
8	3.0	541	541
9	2.8	539	537
10	2.4	546	544
11	2.4	543	543
12	2.4	539	540
13	1.5	543	543
14	1.5	541	542
15	1.6	539	543
16	1.7	538	540
17	1.4	539	543
18	1.7	537	543
19	.8	538	542
20	.7	538	540
21	.8	540	539
22	8.7	540	545
23	2.2	541	536
24	1.3	540	540
25	1.3	538	539
26	3.9	539	537
27	2.9	540	536
28	2.6	538	639
29	.7	539	541
30	4.5	541	541
Average	2.67	539.6	540.7

An examination of the above tabulations shows that while there is usually some discrepancy between inlet and outlet tests, this discrepancy is small, and probably due to experimental error, rather than due to any appreciable absorption of benzols from the gas.

Conclusions

In conclusion we can state that the Koppers naphthalene apparatus removes the naphthalene and gum-forming constitutents from the gas down to any point desired. It does this at an expense of so small an amount of the illuminants in the gas that the loss in heating value is not detectable with an ordinary gas calorimeter. This does not mean that there is no loss in heating value, but it does mean that, so far as the gas man is concerned, he need not worry about the losses incurred.

EIGHTY PER CENT OF HEAT WASTED WHEN COAL IS NOT TURNED INTO GAS FIRST

From eighty to ninety-five per cent of the energy stored in coal is lost when it is burned in furnaces or stoves, remarks the New Jersey Public Utility Information Committee. It is only the gas in the coal that is burned and much of the heat is lost, as well as all of the valuable by-products, when coal is burned in furnaces.

By modern gas-making methods each ton of coal will produce approximately 11,000 cubic feet of gas, 1,400 pounds of coke, which contain as much heat as an equal amount of coal, five pounds of ammonia liquor, one and one-half gallons of benzol, ten gallons of tar, and a considerable amount of sulphur and naphthalene.

The gas can be burned with an efficiency of eighty per cent; the coke can be used as fuel or turned into additional gas by the carburetted water gas method; the sulphur, ammonia liquor and naphthalene can be converted into chemicals and fertilizer; and from the tar can be obtained dyes, perfumes and drugs.

¤ ¤ ¤ ¤

NO PUBLIC OWNERSHIP FOR PRESIDENT COOLIDGE

"They have government ownership abroad. In Germany it takes 23 men to move a ton of freight one mile; in Italy it requires 24; and in Switzerland it requires 31. In the United States it takes only 5 men.

"It is interesting to note, also, that, reduced to terms of bread and butter, railroad employees in those countries show weekly earnings of about one-third the average in this country.

"Measured by our experience, by efficiency of service, by rate of wages paid, we have everything to lose and nothing to gain by public ownership. It would be a most perilous undertaking, both to the welfare of business and the independence of the people."—President Coolidge.

¤ ¤ ¤ ¤

NO DANGER FROM INSTALLMENT BUYING

English buyers are said to be withholding orders for American goods on the theory that we are to have a panic in the United States in a few months because 70 per cent of American wages are pledged to future commitments on the installment buying plan. There has been a lot of idle talk about the "evils" of the installment system. The American Bankers' Association was recently set at ease on the subject by a report by Milan V. Ayres, economist and analyst, who had made a scientific investigation of the whole matter. He found that installment buying was not increasing at any alarming rate in this country, only 8 per cent, in fact, from 1922 to 1925, while savings deposits had increased 17 per cent in that time. He found the system stabilized. English buyers are all wrong, it appears, in their conclusion that we are facing a panic because they are wrong in their premise regarding the installment buying predicament.—Public Service and Management, January, 1927.

New England Association of Commercial Gas Managers Meeting

Some interesting ideas and plans discussed

With the goodly attendance of twenty-six and President Frank J. Capen presiding, the December meeting of the New England Association of Commercial Gas Managers, held on Wednesday evening, December 29, in the Hotel Westminster, Boston, Mass., was devoted to the discussing of sales plans for the coming year. A general discussion centered around the plans presented by W. Frank Rossman, of Brockton; J. L. Johnson, of Providence; J. J. McKearnin, of Haverhill, and H. A. Alward, of Charlestown.

W. Frank Rossman stated that he would start the year with a clearance sale in January and at this time a special feature would be made on room heaters sold at a special discount. Replacement range sales will also be pushed, especially during the fore part of the year. An allowance graduated in accordance with the price of the new range bought will be allowed for the old range now in use.

During April there is scheduled a ten days intensive sales campaign on white enameled water heaters. These will be sold at the special price of $27.85 during the sale and the regular price throughout the year will be $29.85.

In May there will be a special drive on ranges. There will be no discounts off the regular price, but an allowance will be made for the old range where the new one replaces an old one.

Stimulating House Heating Business

A ten day intensive drive on automatic water heaters will be the feature of the month of July. During the summer gas heating boilers will be sold and installed and the customer billed for them in the fall. In this way it is expected that more house heating business will be secured and that there will not be a rush for house heating equipment with the coming of cold weather.

Mr. Rossman's remarks resulted in a general discussion in regard to flue connections which brought out the fact that some companies will connect no water heaters without flue connections, while other companies have experienced no trouble at all with tank water heaters without flues and have seen no necessity of insisting upon such connections. In this discussion it was brought out that the cost of making flue connections would run somewhere between $2 and $5 per heater depending upon local conditions and that it was necessary to add as a rule $5 to the selling price of the heater in order to cover the cost of the flue connection. Those who had changed from flueless to flue connections found that the increase in price resulted in a more or less serious falling off in sales during the first year after the change, but from then on sales seemed to be less affected by the increase.

Year-Round Advertising

J. L. Johnson, of Providence, said that he proposed to follow the same methods used in 1926 and outlined these by listing seven points. First, there will be no special sales. Second, there will be year round advertising both timely and preparatory, that is advertising aimed to make immediate sales and advertising aimed to pave the way for future sales. Third, the subdivision of the sales staff into specialized groups, each group having its own special selling duties; such specialized effort, as results, meaning more concentrated selling with consequently better volume. Fourth, not over two lines of ranges. Two are carried because of the popularity of a locally made line and the necessity of handling another line to have a complete line of styles and sizes so that every demand may be met. Fifth, emphasis will be placed upon the storage type of automatic water heater. It is considered more satisfactory for everyone concerned to sell this type in Providence than the instantaneous type. Sixth, a limited solicitation of house heating. Seventh, careful cooperation with plumbers, builders and architects.

Mr. Johnson also stated that every effort would be made to make the salespeople more interested in their work and to lead all employees who come in contact with the customers to take a greater interest in rendering them the best possible service. He also said that although the company will stock but two lines of ranges, it will order for a customer any make that customer may desire.

Desirability of Handling One Make of Range

The discussion of Mr. Johnson's remarks centered around the desirability of handling a single line of ranges. It developed that while some companies confine themselves to but one line, others handle a number of different lines. During the discussion, however, it appeared that the majority rather favored concentrating upon a single line if that were possible. Among the points brought out in favor of a single line were the following: Less capital invested in stock, the higher volume of sales that is almost certain to result when the sales force is thoroughly sold on a single make and believes that make is the very best and each salesman is imbued with enthusiasm for that make. With several makes it is found that if they are shown impartially there is a state of confusion set up in the mind of the customer and sales are lost as a result of that confusion. The managers who handle several makes have found that the more successful salesmen have a strong tendency to concentrate upon a single line. Most of their sales will be made of one make of range. Thus it is

indicated that a salesman naturally sells but one make even though the company handles more than one make. A difficulty arises, however, when a customer has been called upon by a salesman who specializes on one make and then calls at the display room where there is a saleman who specializes on another make.

J. J. McKearnin, of Haverhill, Mass., said that in his company the policy pursued in 1926 would be followed in 1927. There will be no reduced price sales except the annual January clearance red tag sale.

Items to Be Pushed in February

In February radiant fires, warm-air heaters and gas-steam radiators will be pushed, free installations being given. It has been found in Haverhill that an average of 16 feet of pipe is required for each installation. In March radiant fires will be pushed during the fore part of the month and during this month there will be special effort to replace old ranges, especially combination ranges which it has been found hard to replace. New buildings will be given attention and it is expected there will be two blue star houses. One model house was used last year. Those this year are not entirely insulated. During March, also, there will be special effort to sell electric washing machines. These machines are bought from the electric company and are sold because it is believed that when there is a washing machine in a home the washing will be done there and the gas company will sell gas for heating the water.

In April there will be a drive on automatic water heaters. The plumbers are given a special price for connecting water heaters. Effort along replacement lines will still be continued.

Automatic water heaters will continue to be pushed in May. Tank water heaters have not been advertised during the past year and they will not be during 1927. It has been found that advertising automatic water heaters has increased their sales by some 75 per cent while tank water heater sales have not by any means fallen off. So it is believed that if the automatics are advertised and pushed the tank water heater business will take care of itself.

Incinerators

During June ranges and incinerators will be featured, and during July water heaters again and insulated gas ranges. Small miscellaneous appliances and water heaters will be the features for August.

In September radiant fires, room heaters and garage heaters will be brought strongly to the attention of the customers and October will be a space heating month. During November will come a range and Thanksgiving campaign and in December gas appliances as Christmas gifts will be made a feature. House heating and industrial business will be pushed throughout the year and during the fall an industrial survey will be made.

Getting Combination Range Out of Kitchen

The discussion following these remarks centered around the problem of getting the combination range out of the kitchen. The conclusions arrived at was that it was largely a case of salesmanship—selling the gas range idea so well that the customer would no longer want the combination range—but that making an allowance on the old range helped some. The question of heating the kitchen was also touched upon but no solution offered.

H. A. Alward, of Charlestown, outlined his 1927 plans as follows: January, replacement sale. February, working on new buildings with the builders. March, an all gas kitchen campaign. April, range sales featuring the heat control. May, tank water heaters. Enameled heaters will be sold at the same price that black heaters have been sold. June, storage water heaters using a trial proposition. July, small instantaneous water heaters. It is found that there is a very good demand for these heaters in small houses and that they give very satisfactory service. August, a laundry equipment campaign. September, garage heaters. October, room heaters. November, Thanksgiving range sale. December, clearance sale of radiant fires through the method of giving the salesmen an additional commission for selling them.

Bonus and Quota System

These remarks brought about a discussion of the bonus and quota system and it was shown that with properly allocated quotas and liberal bonuses not only were the sales materially increased, but the earnings of the salesmen to such a degree that it was easier to get and to hold really good men. There was an opinion among some of those present that it was necessary to make it possible for salesmen to earn all that they possibly could earn, that is encourage them to make money and give them a special stimulus in this direction through additional rewards for extra special effort. It was also found good practice by those who have tried the plan to give all employees outside of the sales department and heads of departments either a commission or a bonus for bringing in prospects that resulted in sales, or actually bringing in orders. In other words, the more worth while it is made for everyone in the gas company to make sales, and the more the salesmen have an opportunity to make money, the larger the volume of business the gas company will do. The kind of selling you get in the long run depends upon how much you give the salesmen. Those companies using quotas and having bonuses based upon these quotas for the individual salesmen, district managers and others in the department have found that the method is well worth while.

The "Pyro" Radiation Pyrometer

An interesting new temperature measuring instrument

A modern development of the "total radiation" type of pyrometer is being placed on the market as the "Pyro" instrument illustrated (Figs. 1 and 2), in which there are various novel features of technical interest, and of considerable value in commercial heat treatment processes.

Figure 1

The fundamental principle of this class of radiation pyrometer is concerned with the measurement of the total radiant energy (i.e. both heat and light waves) emitted by a hot body, whose temperature is to be ascertained; and the theoretical relation between the temperature of a "perfect black body" and the radiant energy emitted by it is given by the well-known "Stefan-Boltsmann Fourth Power Law" (wherein the radiant energy of any particular temperature is a direct ratio of the fourth power of the absolute temperature of a perfectly black body). In commercial pyrometers of this type a predetermined portion of the radiation emitted by a hot body is concentrated on a sensitive element, causing a measurable force to be developed in this element. In the familiar thermopile, the element consists of a number of small thermocouples connected in series, a cumulative electromotive force being produced and measured off by a sensitive galvanometer.

Professor Fery's experiments were directed to using a single thermocouple, and at the same time to increasing the forces developed in the thermocouple by concentration of a larger proportion of the radiant energy upon it. In regard to the latter, the use of a focusing lens was apparently unsuccessful, and in the radiation pyrometer invented by Fery a concave mirror was adopted, the thermocouple being mounted at the focus of the mirror for receiving the concentrated rays of radiant energy.

Lens More Effective Than Mirror

Since those earlier days focusing with a mirror has been the standard practice until the recent inventions by Dr. Hase have made the use of an objective lens not only possible, but more effective than the mirror, in spite of the greater absorption of the former. The clear quartz lens of the "Pyro" instrument, even though only about 45 mm. in diameter, concentrates sufficient radiant energy on the thermocouple to develop forces fully as great as those developed by actual immersion of base metal thermocouples at similar temperatures. This is an achievement of great merit.

A further point of interest is the construction of the radiation thermocouple employed in the "Pyro" instrument. The couple consists of an extremely thin wire attached to a thicker supporting wire, a "receiving disc" being fixed over the joint for better receptivity of the radiation. The whole couple is then mounted in an evacuated glass bulb and adjusted in the axis of the optical system. The sectional view of the instrument in Fig. 2 clearly indicates this patented construction.

The extremely small mass of the thermocouple gives two important results, namely: 1, speedy response to temperature variations, and 2, development of higher forces due to the higher actual temperature reached by the thermocouple for a given amount of radiation impinging on it. The latter result has its bearing on the E.M.F. values and the former feature means less time spent on a single rereading and also ability to detect extremely rapid temperature variations. A single reading can be taken by an average "Pyro" pyrometer in between 2½ and 3 seconds, which period constitutes a notable achievement as regards "time-lag." These two features, of course, can be summed up in the term "Sensitivity."

Instrument Is of "Fixed Focus" Type

The instrument is of the "fixed focus" type, in which the focal distance between lens and thermocouple is not adjustable by the operator. A "screen" with a central opening is interposed in front of the thermocouple for the purpose of controlling the "distance factor" and to cut off "side-rays" radiated from outside the field of vision. The average "Pyro" has a "distance factor" of between 24 and 30, depending on the temperature range, i.e. the distance of the instrument from the aperture may be as great as 24 to 30 times the diameter of the aperture. This

is a considerable achievement, especially as "Pyro" instruments have been constructed with a "distance factor" as high as 40. The makers advise the use of furnace sight holes whose diameter (or smallest dimension) is greater than that of the objective lens in order to ensure a full field of vision and radiation.

The instrument is provided with an eyepiece which allows full view of the "hot body" sighted on; sliding adjustment of the eyepiece brings the latter clearly into view. Within the "distance factor" limit of the instrument the actual distance between the "hot body" and the objective lens is immaterial, and hence the simple instructions of the makers quickly ensure correct sighting of the pyrometer. Reference to Fig. 3 shows two forms of image as viewed through the eyepiece, and in these the central black disc represents the thermocouple, the surrounding white square (or oblong) represents the view of the sight hole or hot body and the large shaded circle shows the aperture of the sight hole. When the instrument is correctly sighted, the image of the sight hole completely covers the black disc on all sides, but if used at a distance exceeding the limit of distance factor, the black disc is not covered correctly by the image of the hot body and low temperature readings would be obtained.

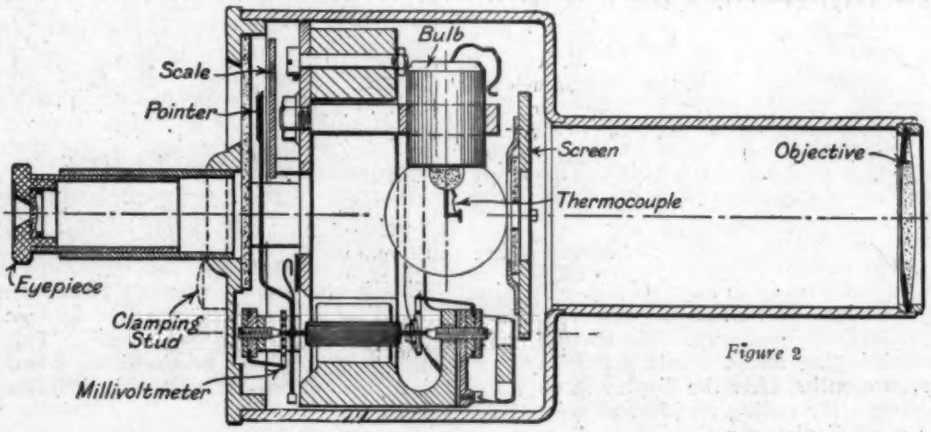


Figure 2

Fig. 5.

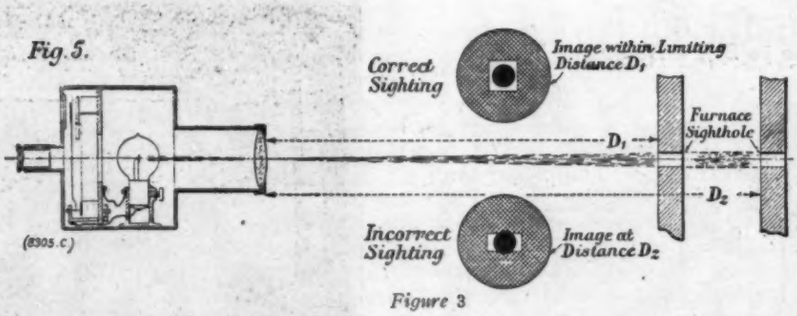


Figure 3

Construction

The general appearance of the instrument is shown in Fig. 1.

The first striking feature is the incorporation of the milli-voltmeter, thermocouple and optical system in a single unit, eliminating all accessories such as cable connection, focusing adjustment. The only manipulation required by the operator consists of declamping the pointer by a pressure of the thumb.

The second main feature is the compact shape and light weight. As an "inspector's pyrometer for periodical checking of fixed pyrometric installations and similar purposes the instrument should prove of great value.

Speed of temperature reading has already been discussed at a technical point and is an attractive practical feature.

In one practical test of measuring a series of temperatures in gas retort benches, 280 readings were obtained and recorded in less than 3½ hours, equivalent to one reading every 45 seconds, inclusive of opening each sight hole, sighting the instrument, and entering the temperature reading.

Display Window Should Sell an Idea

L. E. Lindsay

Director of Studios, The Peoples Gas Light and Coke Company, Chicago

A DISPLAY window, in order to fulfill its mission to the fullest extent, should do more than just display its product. It should sell that product. Indeed, in order to be successful, it must do this. If planned and executed successfully it should go farther and sell an idea as well, an idea intimately connected with the product on display and one which will work on the mind of the prospect when the display is no longer before him. This holds true in many lines of business and especially so in the gas industry.

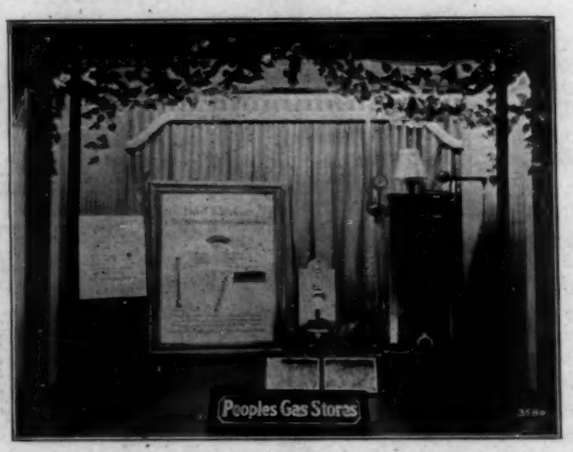
Many times observers of display windows are definite or nearly definite prospective customers who are merely not quite ready to buy. If a display window will sell an idea as well as the subject of that idea, the product or appliance, this thought will work toward bringing about a sale many days, or weeks, or even months, after the display in question has been shown. By selling an idea, as well as an appliance, a good display can thus be made to work in the minds of prospects for a considerable time after the initial exhibition.

Purpose to Sell a Dominant Idea

A representative instance is a window designed and built by the studios of The Peoples Gas Light and Coke Company to exhibit gas-fired house-heating boilers. The purpose of the exhibit was to sell a dominant and striking idea, as well as the gas-fired heater itself. This idea had to do with the convenience and efficiency of automatically controlled gas as a fuel for house heating, based on the theory that though an observer might not be moved by the display to an immediate investigation and purchase, the planting in his mind of the convenience and efficiency of automatic gas heating might later move him to make an inquiry which would in all probability lead to a sale. This was done by having a gas-fired boiler coupled with a large thermometer and a moving dial showing how the heat is regulated automatically in accordance with the rise and fall of temperature shown by the thermometer.

To the right of this display is an automatically controlled gas-fired boiler harnessed to a heat regulator by chain and pulleys suspended from dummy heating pipes in place on the boiler. To the left of the boiler is a small board on which are mounted the control instruments. Further to the left is a large display frame, three feet wide and four feet high, on which is mounted a slide giving a realistic picture of the flames in the boiler which come on and off gradually, according to the seasons and the temperature, the seasons being indicated by a revolving disk showing "spring," "summer," "fall" and "winter," situated at the top of the frame, and by a large thermometer in which the red "mercury" rises and falls, according to the season indicated by the disk. In addition, a dial hand swings from the thermometer to the gas flame and back again, focusing attention on the automatic connection between heat and temperature, and selling the idea of convenience and efficiency.

In front of the instrument board just to the left of the boiler are two cards attached to the motor and thermometer of the control board by red ribbons. The card connected to the regulating motor reads, "This is the janitor (motor) placed on the wall in your basement and operates the furnace." The card conected to the thermostat reads, "This is the mind (thermostat) placed on the living room wall and directs the movement of the janitor (motor) in the basement."



A Display Window that Sold an Idea

Small Light for Heating Thermostat

At the top of this board is a small light that heats the thermostat, exciting it to action and causing the motor to function as it actually does under house heating conditions. By making a one-half revolution it operates the gas valve of the combustion chamber in the boiler, automatically turning on the heat and again driving home the idea of convenience and efficiency, as well as the appliance itself.

This is further amplified by the large display frame at the left as already explained. This is headed prominently by the words, "When you heat

with gas the thermometer runs your furnace." The dial hand (made of copper) quickly falls toward the thermometer just before the "mercury" begins its descent, pointing out that "When the outside temperature falls the house temperature rises automatically." At the bottom of the card are the words, "Illustrating the influence of the outside weather temperature over the operation of your house heating furnace through a cycle of four seasons. Gas is the modern fuel for your heating needs."

At the extreme left is another card reading, "When you heat with gas you fire your furnace just twice each year. In the fall you turn on the gas and light the pilot, in the spring you turn off the gas. It is automatically controlled and runs itself. Let us tell you about it."

Graphic Representation

This is graphically shown by the moving hand which constantly points first to the "season" and "temperature" and then to the corresponding "flame" shown in the slide at the right of the frame. This hand has a very simple mechanism which operates the revolving disk carrying the "seasons," the attention-getting hand, the liquid in the thermometer and the fire slide, all of these being driven by a small motor. This has run quietly from 8 in the morning to 11 at night continuously, with no attention other than oiling and cleaning once or twice each week, for four months, and it has been on three different locations.

With the exercise of a little ingenuity, displays of this type can be had at small cost, this one having been built under my direction in the studio and mainly constructed from small parts that have already been used several times in previous mechanical display features. In this way, the automatic connection between the seasons, temperature, and the gas-fired boiler is simply and graphically presented in an attractive, attention-arresting unit which not only explains and sells its appliance, but, in addition, sells an idea. And ideas are essentially the prime requisite for successful salesmanship.

WHO USES GAS?—GAS COMPANY TAKES STOCK OF ITS CUSTOMERS

The Peoples Gas Light and Coke Company of Chicago made a survey last March of the gas consumed by its 778,807 customers.

More than half of the customers, or approximately 54 per cent, used more than 1,000 and less than 3,000 cubic feet of gas per month each, the total consumption by this group amounting to 770,000,000 cubic feet, or about 40 per cent of the 3,000,000,000 cubic feet sold during that month. The survey also showed that 139,000 customers used less than 1,000 cubic feet of gas per month.

These figures are significant because in order for a gas company to be able to earn a living, it must sell approximately 3,000 cubic feet of gas a month to each customer before it can begin to show a profit. Seventy-two per cent of this company's customers used less than an average of 3,000 cubic feet per month.

A group of 136,000 customers was found to use between 3,000 and 5,000 cubic feet of gas per month, or a total of 498,000,000 cubic feet. Among the larger consumers of gas were listed 675 who used a total of 408,000,000 cubic feet, while 9 customers each used more than 5,000,000 cubic feet during the month, the total for this small group being 83,264,000 cubic feet, an average of more than 9,000,000 cubic feet.

A group of 921 customers was listed as having central gas-heating plants in their homes. This group used more than 80,000,000 cubic feet during the month of March.

Manufacturers numbering 6,654 were listed, with a total consumption of nearly 418,000,000 cubic feet, and 9,248 hotels, restaurants, clubs, etc., used a total of 365,000,000 cubic feet.

Nearly 129,000 customers lived in single family houses, 322,000 in the two-or-three-apartment houses, and 257,000 in larger apartment buildings. Figures showed that the dwellers in apartment houses were the small users of gas, while those in single family houses used much more.

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The illustration shows a modern conveyor type gas fired japanning oven that is 110 feet long. This oven is used for baking japan on springs of all kinds. Gas is the fuel used.

In this particular heat application, the right temperature evenly maintained and absolute dependability of supply are the essential requirements.

Gas fuel for heating can serve you in your business. Write, or phone, the Industrial Division, 180 Remsen Street, for a fuel survey by an Industrial Engineer.

Telephone: TRIangle 7500

The Brooklyn Union Gas Company

*Building Domestic Load Through Merchandise Sales

Pointed paragraphs on customer contacts

J. E. Davies

General Manager, Peoples Gas Stores, Inc.

THE question which has most often been put to me, and still is, is, Why do you sell so many small items which do not consume gas?

My answer, which is perfectly obvious to myself, may be rather obscure to others when I answer, in order to increase contacts with our customers.

It makes no difference if the mistress of the house does her own work, or whether she supervises the activities of the home, the kitchen is the workshop and in order to make this kitchen an efficiently operating unit, it must, like all workshops, have the proper equipment and tools to do the variety of work demanded.

In the days of our forefathers, the family wants were simple and the general social order of things was not nearly as complex as it is today. This condition is reflected to a large degree in the kitchen and we find the kitnchen needs in the modern age exceed by hundreds the requirements ever dreamed of by our forefathers. Fundamentally, of course, human beings are quite the same as they ever were, and the appetite appeal still opens the way to a man's heart. Is there any reason why the commercial department of any gas company should not profit by conditions as they now exist in the home, especially when home service has opened ways for housewives to prepare food in a manner never attempted before by others than culinary artists?

Kitchen Equipment Has Wide Publicity

Study the ads appearing these days on home building and observe especially the publicity given to kitchen equipment. This good will building helps the utility man. I cannot help but think that it is particularly a part of my job to make the kitchen a joy and pleasure to the housewife.

My slogan for several years past has been, let me increase the number of contacts with my customers and I will show you an equivalent increase in domestic load.

The company, which I am proud to represent, in recent years has profitably sold tens of thousands of kitchen aids, other than gas-burning appliances, in order to strengthen and increase the contacts with our 850,000 customers. We comb the country for little devices which will aid the housewife in the preparation of food.

If such devices are placed on sale they must, of course, be effectively displayed and advertised. In other words, we must bait our merchandising policies and the bait used must be tempting, appealing, sincere and attractive.

Proximity of Line to Customer's View

One of the factors which most influences ready sales of a varied line of household appliances to customers is proximity of the entire line to the customer's view. In the general run of merchandising establishments, the items of interest to the home owner and builder, which a housewife truly is, are not as accessible to the buyer as one may imagine. Try to buy kitchen needs in a big city and you will be directed from one floor to another before a series of purchases can be accomplished.

The gas company's sales floor very fortunately offers a splendid medium for educating the housewife to use a diverse assortment of kitchen utensils and tools in that they can be effectively displayed in practically the same rooms as occupied by the gas-burning appliances. In our case all these items are directly before the eyes of the customer. Go over to Webber's store on the boardwalk and notice how popular this store is to both men and women—Webber sells all those little things for the kitchen.

Connection With Increased Domestic Load

Now, how does the sale of a small item to a customer increase our domestic load as represented by that customer? We sell an orange peeler for an exceedingly small cost. A customer purchases one. She buys a small item that will peel her oranges better than anything she has ever used. We are selling her, therefore, a service. Being satisfied with this service at a small cost she subconsciously remembers it every time she passes a display window of one of our stores. Finally, she discovers that the sales floor of this particular store has for sale utilities in the form of gas burning appliances, and through our established contact she soon becomes a voluntary purchaser of some one or more such appliances. We have, therefore, established a contact which has resulted in a permanent customer, permanent because she has confidence in our ability to serve. Remember, the sale of little things must render a service to the buyer.

We all make purchases in the shops of our friends because they have demonstrated to us in the past that we can have faith in their business policies. You and I may, from time to time, fall before an attractive price bait. We generally find, however, that the bait has not been entirely wholesome and leaves a reaction that generally tends to discourage repetition. A merchandising business can only endure through service to its clientele based on confidence. The little orange peeler mentioned produced

(Continued on page 90)

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* Paper presented at Tuesday meeting of the Commercial Section, A. G. A. Convention, Atlantic City, October 12, 1926.

As The Journal Views It

TUBING AND TAPS

Each winter sees altogether too many persons "shuffling off this mortal coil" due to their gross stupidity in using inferior gas appliance tubing. Indeed they might properly be classed with those morons who rock the boat, kill people with "unloaded" pistols and tortoise-like stick their heads out of moving train windows.

Such individuals will "paw over" a remnant at a silk sale with all the zeal and care of a Polish money lender. But when they essay to purchase a length of tubing they oft-times gravitate to an astonishingly low level of intellectual stupidity. They will descend blithely upon the neighborhood hardware huckster and foist upon themselves sixty or so inches of positively worthless tubing with about as much—or less—circumspection as accompanies the buying of a length of clothesline.

The unreasonable and unjust aspect of the whole affair—assuming that one or more of the above mentioned shoppers become deceased as a result of their inexcusable ignorance—is that many times a dreadful pother is raised in the newspapers and both gas and gas company alike come in for a generous round of lambasting. As a blanket result of the entire easily avoidable situation gas companies ponder mightily in devising some sort of hog-tied, sure-fired publicity that will save most, if not all, of these stupids from themselves.

Gas companies are and, as a matter of fact, have for years been broadcasting publicity, warning the gas consuming public of some of the direful effects of using inferior tubing. Strongly reinforcing this propaganda is the recent work of the A. G. A. Testing Laboratory. In addition the various city health departments have come to co-operate in a wholly desirable manner. All of this educational work must perforce be emphasized and augmented to the fullest.

The director of the A. G. A. Testing Laboratory has indicated that tubing should never be used that has been in storage for more than a year. In turn it appears that, although tubing lasts longer in service than in storage, there is nevertheless some more or less definite length of time after which the tubing becomes unsafe to use. Once determined this figure might form the basis for further safeguarding the customer. That is to say, the gas company might attach a properly printed tag on each piece of tubing as it is sold to a customer; the same not only stating the desirability of purchasing approved tubing but also containing a gummed detachable portion on which could be stamped or written the date of purchase as well as the date recommended for discontinuing the use of the tubing.

This gummed stub could be pasted in their cook book or bank book or better still an offer could be made that if the stub were returned on the date of expiration, or before, a credit of one or two feet would be allowed on a purchase of new tubing.

Consider the question as you might those slipshod and lackadaisical persons who will persist in using inferior unapproved tubing are approaching a condition or state where they are in line for a right lusty sounding of taps over their cadavers.

HANDBOOKS

The gas engineer, particularly the younger element, runs across a great mass of unrecorded data and facts in the course of his daily work. He might stumble upon or work out some seemingly trifling short cut to the solving of a certain problem. Or he perhaps evolves a new method of condensing and classifying some data having to do with the running of the plant.

All of this should be kept in some neat and readily understandable manner; preferably in the form of a handbook. There is a great mass of information peculiar to a certain job that is not to be gotten from the standard handbooks and the young engineer can and should compile his own handy data book to supply this deficit.

(Continued from page 88)

a customer for us; our thousand and other small devices will produce a thousand other satisfied customers.

In this way then the public soon learns where the headquarters for gas burning appliances are, especially if the merchandising department, if at all alert, will trade up every customer that enters their store to purchase even the most simple item.

Application to Small Gas Company

Some of my audience may say, "Your plan doubtless has merit in the large city, but in a small town the idea is not practicable in that it would irritate the local merchants who sell kitchen cabinets, ice boxes, aluminum, and other kitchen ware, etc. Gentlemen, by actively merchandising such items you help to create a demand for them. You will help your associate, the local merchant, to sell his wares, increase his profits, and build his business contacts by telling your customers of the need they have for such items in the kitchen. You are not a competitor of your local merchant, you are a sales stimulant. One man can't get all the business and two can't get it all, but the two can create a bigger demand for an item than one, and the two can sell more together than either one alone.

Finally, diversified lines of merchandise meet the diversified tastes of our customers, thereby bringing them closer to us than if we concentrated on one particular line.

If I sell a gas range today, I have closed with that customer as far as cooking appliances are concerned for the next ten years. I would like to find a way to market something each day or even each month to each of our 800,000 gas users. This could not possibly be done were we to sell only gas ranges, water heaters, and space heaters.

In closing, I can truthfully say that through the sale of small items I will say, how do you do to 190,000 of our gas burning customers during this year. I have had the opportunity of seeing the number of contacts double in just one year and I am confident that my sales organization have "traded up" these contacts until a large number of them are bigger gas users today than they were a year ago.

BRITAIN HAS LEARNED SMOKE LESSON AND IS MAKING GAS ITS FUEL

Public opinion in Great Britain, aroused to the evils of smoke-smothered cities, has turned against the burning of raw coal in cook stoves and grates. Gas, and to a smaller degree coke, both smokeless fuels, are rapidly supplanting coal, according to a recent survey.

Of 28,500 houses built in London during the past five years, practically all are equipped with gas stoves. In Glasgow, of 16,000 houses 95 per cent are so equipped, and similar figures appear for Liverpool and other large industrial cities.

Viscount Gage, in charge of the Government's Smoke Abatement Bill in the House of Lords, said recently, "Very great progress in smoke abatement has already been effected by the substitution of gas in place of coal for cooking."

It is estimated that smoke and soot cost the city of London $25,000,000 a year in damage to property, while the damage to public health due to sunless, smoke-polluted atmosphere is recognized by physicians and public health authorities. Two-thirds of the smoke and soot in cities is said to come from domestic coal-burning apparatus, so that the substitution of gas-fired equipment in homes has an important effect upon atmospheric conditions.

A close relation between smoke and pneumonia was recently pointed out by Dr. William White, pathologist of the United States Public Health Service, and the United States Bureau of Mines puts the per capita smoke damage in American cities at $7.66 a year.

The one solution of the smoke problem is the use of gas, coke or other smokeless fuel, instead of coal, according to S. W. Parr, of the University of Illinois, who says, "Smoke abatement is an outstanding social problem of the day. The increase of the smoke evil in our large industrial centers has set in motion numerous investigations. Sooner or later these studies lead back, for a solution of the problem, to the carbonization of coal and the use of smokeless fuel."

Engineers in the United States are joined with public health authorities and are fighting the smoke evil on grounds of economy. Every ton of coal burned raw, according to the Fuels Division of the American Society of Mechanical Engineers, wastes recoverable by-products worth seven dollars. It is estimated that the use of gas and coke, the two chief smokeless fuels, would result in the saving of hundreds of millions of dollars a year in the large cities of the world.

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RESEARCH

All fields of knowledge are now regarded as suitable for research, but research in science has been the most productive. One college president has stated that in the physical sciences alone the pure research of universities has produced in applications to industry a return of fully one hundred per cent annually on all financial donations to higher learning since the founding of Harvard College. Yet there is the fact, vouched for by Secretary Hoover, that whereas $200,000,000 is spent annually on applied science, only $10,000,000 is available annually for pure science. This is a situation which needs remedying. We suggest systematic annual confer-

(Continued on page 92)

INDUSTRIAL GAS LESSONS

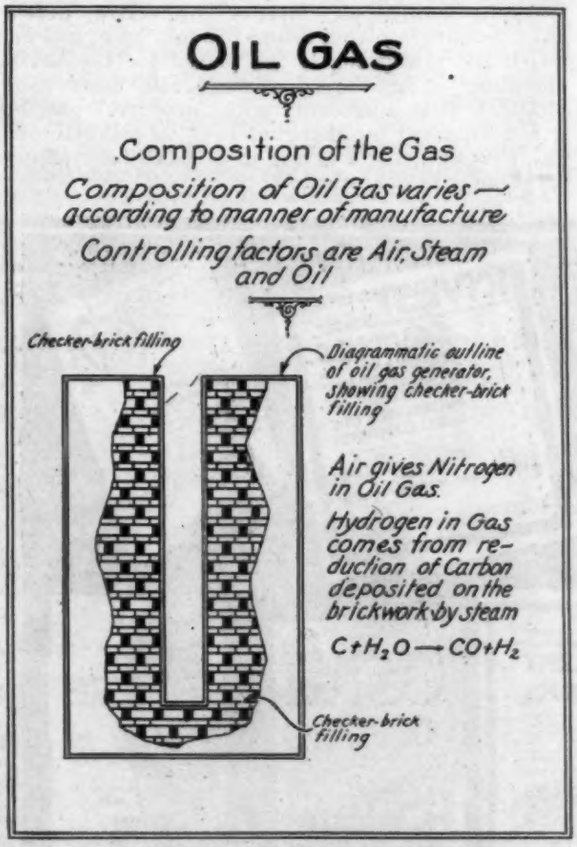
IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 153

Oil Gas

Composition of the Gas

The composition of oil gas has been said to be very much like that of coal gas. Then again, oil gas is no different from any of the other natural or manufactured fuels, in that its composition varies, particularly in accordance to the manner in which it is made. Thus, it is possible to make oil gas with the admission of no air at all, and in this case a gas is obtained that contains very little nitrogen and appreciable quantities of hydrogen. The hydrogen in this type of oil gas comes from the decomposition of carbon deposited of the checkerbrick by reaction with the steam blown in together with the oil. In processes where air is admitted to the oil gas condenser, it is not surprising to find that the oil


OIL GAS
Composition of the Gas
Composition of Oil Gas varies — according to manner of manufacture
Controlling factors are Air, Steam and Oil
Checker-brick filling
Diagrammatic outline of oil gas generator, showing checker-brick filling
Air gives Nitrogen in Oil Gas.
Hydrogen in Gas comes from reduction of Carbon deposited on the brickwork by steam
C+H2O → CO+H2
Checker-brick filling

gas contains appreciable proportions of nitrogen, and that it is also relatively poor in hydrogen.

Before leaving this discussion of the composition of oil gas it should be mentioned that the quality and constitution of the oil, used as raw material, also have a very important influence in determining the make-up of the gas.

Analysis of Jones Process Oil Gas

Constituent	San Jose, California, per cent	Gas from heavy California crude, per cent
CO_2	2.8	2.6
CnH_2n	2.7	7.0
O_2	0.1	
CO	10.6	9.2
CH_4	27.0	34.6
H_2	53.5	39.8
N_2	3.3	6.8
	100.0	100.0
B.t.u. per cu. ft.	535 B.t.u.	680 B.t.u.
Specific Gravity	0.391	0.482

Analysis of Dayton Process Oil Gas

Constituent	Analysis of 450 B.t.u. Gas, per cent
CO_2	6.1
Unsaturated hydrocarbons	14.7
CO	5.6
Saturated hydrocarbons	7.8
H_2	1.7
O_2	0.9
N_2	63.2
	100.0
B.t.u. per cu. ft.	450 B.t.u.
Specific Gravity	1.02

Similarity Between Oil and Coal Gases

The similarity between oil gas and coal gas can be readily seen from the foregoing tables and from the fact that the average coal gas will contain approximately 1 per cent of carbon dioxide, 6.6 per cent of higher hydrocarbons, 9.0 per cent of carbon monoxide, 34 per cent of methane, 47 per cent of hydrogen and 2.3 per cent of nitrogen. It is only the oil gas made by the Jones process that can be compared with coal gas, for the admission of air to the Dayton apparatus in order to partially burn the oil has the effect of materially increasing the nitrogen content and decreasing the carbon monoxide content, while the gas contains but little hydrogen. In the Jones gas process the admission of steam results in the formation of a material amount of hydrogen and carbon monoxide.

(Continued from page 90)

ences of universities and industry with a view to arriving at a working basis mutually profitable.

A preliminary to such conferences might well be a chart prepared by scholars to show the main items of industry's debt to university research. Everybody knows about Newton, Faraday, Morse, and a few other university figures whose discoveries have led to vast industrial wealth. But the whole story, if sketched merely in outline, would be an eye-opener and would demonstrate the monumental folly of hobbling university research by inadequate funds. It might easily be made a document of such fascinating interest that newspapers the country over would take note of it and thus join in a nation-wide campaign of education.—New York University.

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COKE AND COUPONS IN ADVERTISING

The advertisements we are reproducing this week should furnish the advertising gas man an idea or two for stock and coke advertisements. All nine of the advertisements reproduced here are of that "different" variety and again go to prove that the gas man is advertisingly at it. The Koppers Twin City Coke advertisements are unusually good; art work, copy and typography all blending into a first class attractive advertisement. The Milwaukee Gas Light Co.'s Seven Per Cent Cumulative Preferred Stock advertisements are equally as interesting and we don't see how the "seven per centers" can possibly pass it by. Consistently, continuously advertising will see gas sales go over big in 1927 through the sale of service and appliances. Now, all at once, let's shove 'er up—that send-out curve—by advertising.

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MANUFACTURED GAS MAY REVOLUTIONIZE CERAMIC INDUSTRY

Thousands of Dollars Can Be Saved By Elimination of Costly Muffle

A saving of $100,000 on each kiln in the ceramic industry which uses manufactured instead of so-called "producer" gas, is a possible development of the near future. Already three plants have made the change to manufactured gas, thereby saving $300,000 over the old methods.

The ceramic industry makes our bathtubs, sinks and other articles of utility so necessary to the modern home. It is one of the few industries that cannot afford to shut down or take a vacation. Indeed, the kilns used to bake the products never shut down. When a kiln in the ceramic industry goes dead a tremendous loss is incurred, and the owners of the plan so afflicted just naturally pass out.

The heart of a ceramic plant is the costly carborundum muffle, an interior protective heating chamber ranging from 250 to 350 feet long, and into which the raw products are placed for the baking operation. A muffle of average size costs about $100,000. It is a necessity with "producer" gas, but it is eliminated by changing over to manufactured gas, thus effecting a saving of $100,000 on each new plant put into operation.

Does Winter Scare You?
Koppers COKE
Nearly $2.00 Less than Anthracite
MILWAUKEE GAS LIGHT COMPANY
$500,000,000
7%
CUMULATIVE PREFERRED STOCK
$100
INVEST YOUR SAVINGS
7%
CUMULATIVE PREFERRED STOCK of the
MILWAUKEE GAS LIGHT COMPANY
"Safe as Milwaukee Bank"
It's nice to get up in the morning
Koppers COKE
Nearly $2.00 Less than Hard Coal
How Do You Spend Sunday Morning?
Koppers COKE
Nearly $2.00 Less than Hard Coal
Call Your Dealer
BURN GAS COKE
CONSUMERS POWER CO.
A REAL "SAFETY FIRST" INVESTMENT FOR OUR HOME FOLKS
7%
MILWAUKEE GAS LIGHT COMPANY
"IT'S AS SAFE AS MILWAUKEE ITSELF"
COKE
INDIANAPOLIS BY-PRODUCT
CITIZENS GAS COMPANY
Free Service
At your request—a crew of heating experts.
They inspect your furnace—advise the correct size of coke to use and start you right.
If you now use coke—they will check you up and see if you cannot make a further saving
This Costs You Nothing
Call Mc 7800
Koppers COKE

MISS RUTH SOULE SPEAKS TO 500 HIGH SCHOOL PUPILS

Miss Ruth Soule, home service director of The Brooklyn Union Gas Company, recently spoke to five hundred pupils of Evening High School Number 15, State and Schermerhorn Streets. Miss Soule's subject was "The Correct Use of Gas and Gas Appliances."

Miss Soule, in opening her talk, stressed the many benefits derived from the use of the oven-controlled range. "Its use," said Miss Soule, "insures properly baked food, and because the temperature is automatically controlled, a large amount of gas is saved." Slides showing the marked beauty of this modern range were shown and aroused marked interest.

Miss Soule also discussed the correct method of Smoothtop cookery; suitable equipment for gas stoves; the correct adjustment of burners. She also told about the many conveniences of the gas-fired labor-saving devices, such as laundry equipment, washing machines, calenders, dryers and irons.

Miss Soule closed her talk with the showing of slides depicting the development of the gas range from the nineteenth century models through to the modern gas-equipped kitchens of today.

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Miss Anna G. Barrows

MISS BARROWS "GOES ON THE AIR"—OTHER ACTIVITIES AT BROOKLYN UNION

On Wednesday morning, January 12, at eleven o'clock, The Gas Companies of Greater New York inaugurated a series of broadcasting cooking lessons from station WEAF. Miss Anna Barrows, special lecturer of the Teacher's College of Columbia University, delivered the talk, with special instructions for brides.

Miss Barrows will lecture "over the air" every Wednesday morning, at the same hour, for eighteen weeks. She has prepared an authoritative book on homemaking, which will be distributed by all of the gas companies of Greater New York upon request.

The gas companies of Brooklyn subscribing to this course are The Brooklyn Union Gas Company, Kings County Lighting Company and the Brooklyn Borough Gas Company.

In addition to the broadcasting program for the next eighteen weeks, our Home Service Division has ascended the public lecture platform. Two groups of students of Evening High School Number 15 will be told about the uses of gas for all domestic purposes. This school has an attendance of about 1,000 people. The controlled oven, laundry equipment and various other gas-burning appliances will be displayed and explained. Slides will also be shown.

A special demonstration at the Newtown auditorium was given Friday, January 7, to 150 members of the Elmhurst Mother's Club. Cakes, frostings, cookies and cream puffs were prepared and served.

The oven-cooked meal attracted large audiences at the Wednesday and Thursday classes at Newtown.

Boston baked beans and brown bread with fluffy almond souffle were the features of the week at the Williamsburgh sub-branch last Tuesday and Wednesday.

Organizing a Home Service Dept.

What you should know about it

Anna J. Peterson

Director, Home Service Department, The Peoples Gas Light and Coke Co., Chicago

WHILE in Atlantic City at the American Gas Association Convention in October, I had many gas men, feminine and masculine, ask me for a good organization plan for home service. That is a difficult thing to give when you are not on the firing line of that special gas company.

I have worked out a plan along these lines for the women in charge of the branch home service departments of The Peoples Gas Light and Coke Company, Chicago. It is entitled "What You Should Know." It seems to me it might be a good plan for every gas company to look this over, studying it with the home service director, to line up what could be supplied from this outline to their particular service.

Some Items and Questions of Interest and Value

1. How many people come into your gas company to pay bills or buy merchandise? What percentage of them are women?

2. Do you feel this important enough for the growth of your home service department to interview these customers in a very pleasant, sociable way in the morning or during the evening when the store is open and no classes are being given?

3. It is of vital importance that every home service director should sell herself completely to every employee of the company. This means all of them from the scrub woman to the president of the company. They must talk about you, and do it in an interesting manner. To do this, they must love and respect you and you must be worthy of it.

4. How many elementary and high schools are there in your locality?

A. How many are public? How many sectarian?

B. Where are they located?

C. How many visits to each of these schools have you made? It is not enough to go once and find the teacher out. Go until you have made her a friend of yours. You are the company when you go to her.

5. How many churches, Protestant and Catholic, in your locality or territory?

A. Where are they located?

B. Who is the pastor?

C. How many women's clubs, guilds and ladies aides are in these churches?

D. How many father-and-son clubs? How many mother-and-daughter clubs?

E. Have you made a special effort to meet the chairmen or business managers of these organizations? Have you arranged to have these groups come to a special social function or lesson at a given time?

F. Have you sold yourself and your service to the church you attend, and the clubs to which you are a paying member?

G. Have you written to the pastors of these churches and invited them personally to visit your department, that they may understand the work and be able to cooperate with you and the women's organizations in the church?

6. How many know that sectarian schools have no domestic science departments, and would enjoy a simple talk on foods? This is a splendid outlet for your home service propaganda.

Contact With Dietitians

7. Have you thought of going into hospitals in your locality to leave your message of home service together with your card? Dietitians will welcome you and be so happy to have you for a bureau of information. In our daily service we are wrung so dry for information, that any one experiencing this, like the dietitian, will be only too glad to cooperate with you, because it means a relief of this tension for her.

8. Have you settlement or field houses in your neighborhood?

A. What clubs meet there? What have you done for contact with them?

B. What service have you offered them which would make it more attractive for them to meet in the home service department once a week for their cooking and homemaking problems, rather than in the settlement headquarters?

9. How many business men's organizations like the Improvement Association, Kiwanis, Commercial Club Doctor and Dentist, Grocers Associations are in your vicinity? These men meet once or twice a month in every representative community in the United States.

A. How many have you tried to reach with a snappy, entertaining talk at their lunch hour, bringing out the importance of your service in your company for the homes of the community? Do you bring to them some of our daily questions such as, "What is lukewarm water and where do I get it?", or "I spent a whole day looking for chopped parsley and couldn't find it in the stores. Where can I get it?", and "I do not have any success with my new oven thermometer. I placed it in the oven as instructed and turned on the low flame. It did not stop at 350 degrees where I wanted it to, but kept going right up to the highest point. What is the matter with it? Do you think I had better return

it?" They may laugh at these dumb questions, but in their leisure moments they will realize the seriousness of them and feel the importance of boosting this marvelous service which you have to offer.

Banks and Business Colleges

10. How many banks and business colleges have you in your community? Have you offered them any service such as an evening class for their women, getting the bank to recognize your service by making the women so efficient that they create a bank account with their savings? Do your banks display a card or placard calling the attention of their clients to your service? Do they all talk about it in committee meeting, both among the faculty and the laymen?

11. Have you made your service a living, thriving organization for the grocers in your locality? For example in our city the menu for Sunday dinner given over the radio on Friday is placed in every grocers window. The butchers have the cut of meat called for already for their women customers. Meat cutting demonstrations by local butchers have been given in our services, with mutual profit for all.

12. A small home service department may get from the bookkeeping department the names of the women customers and phone 10 to 15 of them each day, telling in such an attractive way of the day's lesson that they cannot stay away. They become boosters for the service, if it is as good and even better than represented over the phone.

These foregoing points are wonderful tieups which will bring an earnest, well-meaning director into the haven of a successful home service department for her gas company.

1. *A Meat-Cutting Demonstration at a Branch Home Service.*

2. *A Girl Scout Class (Working for the Cooks Badge).*

3. *A Neighborhood Party With the Visiting Nurse Included. The Children Were the Special Guests.*

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

LOAD TEST FOR FIRE CLAY REFRACTORIES

This is the title of a publication, entitled Technologic Paper No. 2, issued by the American Refractories Institute.

The paper first deals with the effect of firing temperature upon deformation. It is shown that bricks made from finely ground clay and hard burned will have a deformation of 2.76 per cent while those soft burned will have a deformation of 6.92 per cent. On the other hand bricks made from ground clay and hard burned have a deformation of 4.97 per cent, while those soft burned have a deformation of 9.44 per cent.

Attention is also paid to the relation of spalling, slagging and shrinkage to load test properties and this is followed with a discussion of the relation between fusion and the load test properties. It is shown that there is no relation between the load test at one temperature with that at another temperature and the misapplication of standard load test data to service conditions is indicated.

It is stated in conclusion that, first the load test should not be used for determining the suitability of fire clay brick to meet a variety of service conditions; second that for selecting brick to support loads in furnace walls and arches, the load test should be run under temperature and load conditions of actual use; third, the deformation is not apt to be an important cause for failure of fire clay brick in a furnace wall and will occur only when a high temperature is developed at a considerable depth in the wall.

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CARBONIZING CONDITIONS AND NATURE OF COKE

In an exhaustive investigation on the conditions of the carbonization process and the nature of coke produced, a special apparatus was employed for the treatment of the coal, cleaned down to a uniform ash content of 0.7 to 0.8 per cent. The coal was coked at temperatures of 550, 750, 950 and 1150 degrees C. Various substances were also mixed with the coal in these tests.

It was found that the values for the pyrochemical properties, viz, combustibility, reaction temperature and reactivity, diminished considerably as coking temperatures rose. This also held good for coal which was mixed with six per cent of silicic acid. The reactivity of coke containing three per cent of iron oxide was considerably better than that of the pure coke and six per cent of iron oxide gave still further improvement. It was shown that the determination of the combustibility and the reaction temperature may generally be deemed as sufficient indication of the reactivity, although cokes containing iron must be regarded as an exception to this rule.

Tests were also made to determine what is responsible for the more favorable pyrochemical results in the lower temperature coke, and ash-free samples were maintained at a temperature of 1150 degrees C for a few hours. No change in reactivity was observed. It was finally determined that reactivity was not influenced by the quantity of volatile matter in the coke, but only by modification in the condition of the carbon.

In summarizing it was said that the pyrochemical and physical properties of the coke are determined to a very great extent by the condition of the carbon, and that this, in turn, is determined by the temperature at which the coke is produced. Reactivity can however be considerably influenced by catalyzing agents during the coking process.

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FUTURE OF HIGH TEMPERATURE CARBONIZATION

In discussing the future high temperature carbonization in an important paper, published in Gas Journal (London), December 22, 1926, pages 774-6, it was pointed out that low temperature carbonization has been a commercial failure up to the present time. Existing carbonization practice will continue in the smaller works but carbonization in bulk will supersede present methods in the larger works. The new practice is highly labor-saving as seen from the results obtained in the Stockholm gas works, thus:

Labor for Carbonization only	Therms per man per day
Vertical retorts (steamed)	516
Vertical retorts (non-steamed)	454
Horizontal retorts	541
Stockholm chamber ovens	1216

Attention is also paid in this article to the physical structure of the coke produced and the importance of making a coke with the correct structure and its connection with the manufacturing process. The new chemical uses for the manufactured high temperature gas must also be considered.

The ammonia situation is also discussed as well as benzol recovery. Great room for improvement in the efficiency of the latter process was indicated. It was also indicated that there is little likelihood of further extension of the complete distillation of tar. Considerable attention was paid to the disposal of coke oven gas for domestic and industrial applications.

New Gas Co. for Bay Ridge to Be Discussed

Sheehan to Explain Movement Before Local Chamber—$500,000 Needed to Start Organization

Brooklyn.—Plans for the formation of a gas company to compete in Bay Ridge with the Kings County Lighting Co. will be presented at the annual meeting of the Bay Ridge Chamber of Commerce.

The movement, which has municipal ownership of the utility as its ultimate aim, was started by Albert Clements and is being sponsored by former Deputy Water Commissioner Cornelius M. Sheehan. At the meeting Mr. Sheehan will outline the new system of manufacturing illuminating gas at lower than existing rates.

According to Mr. Sheehan, a new method of manufacturing gas is being perfected, by which the product can be produced at a cost of 80 cents to the consumer with a good profit to the producers. With the low price, the backers of the new venture hope to tempt residents of Bay Ridge into backing the proposed producing organization.

Nothing will be done, Mr. Sheehan stated, unless the residents of the vicinity show a desire to finance the company. About $500,000 will be required to start the organization and between $1,000,000 and $1,500,000 will put it on its feet.

These sums are to be raised by stock and bond issue after the franchise is secured. Mr. Sheehan expressed assurance that a franchise could be secured and the money raised if the people of Bay Ridge "really want cheaper gas."

The ultimate aim, Mr. Sheehan declared, is to make the proposed company a municipally-owned organization. If it is formed at all, it will be with the proviso that the city may take it over whenever it saw fit.

According to a high official in a large gas company here, the sum sought by the bankers of the proposed company is "ridiculously low." The official pointed out that it costs $100,000 to lay a new main one-half mile long, while more than 200 miles would be required to meet the needs of the section.

He added that the cost of constructing a producing plant would be tremendous, and that the new type of gas has not yet been perfected. Mr. Sheehan admitted engineers are still experimenting with the gas, but added the experiments conducted thus far point to success.

The gas company official said the proposed organization would find considerable difficulty in securing a franchise. The whole scheme he described as "visionary."

* * *

Mission Town May Sell Gas Plant

Santa Clara.—The Pacific Gas and Electric Company bid for the town gas distribution system will be considered by the Board of Town Trustees. The offer allows $50,000 cash, and will immediately put into effect the rates now applying on gas in San Jose, resulting in a saving of more than $10,000 annually to local consumers. New feeders of larger size are to be installed at a cost of $81,000, and extensions are to be put in at a cost of $19,000.

* * *

Wisconsin Utilities Association Convention

Madison.—The dates for the Gas Section convention have been set for February 24th and 25th, and it will be held in Racine, Wis.

PLANS MAY BE CHANGED

Present Drawings of the New Pollard Building Not Entirely Satisfactory to Mr. Pollard

Lowell.—It is not expected that the decision of the Lowell Gaslight Company not to purchase that part of the land of the A. G. Pollard Company on Merrimack street, occupied by the Masonic Temple, will interfere with the construction of the contemplated A. G. Pollard Company new store building, although it may result in a change to some extent in the store building drawings, as the plans are not entirely to the satisfaction of the senior Pollard.

When talked with about the matter, A. G. Pollard stated that he is considering erecting a store building on the site which, it was stated some days ago, the Gaslight Company had agreed to buy. That question has not been entirely decided upon as yet, but it is being considered.

Regarding the Gaslight Company plan, Manager John L. Eigenbrot stated that no site for the company's contemplated new office building has yet been decided upon, although several are being considered. He stated that just as soon as a site is agreed upon, an announcement will be made by his company.

* * *

Foshay Co. Acquires Platteville Utility

Platteville.—The Platteville Gas Company, Platteville, Wis., having 492 customers and an annual output of 12,340,000 cubic feet of gas, has been taken over by the W. B. Foshay Company for the People's Light and Power Company of Wisconsin. William C. Butterworth will be retained as manager. The Foshay Company has acquired a large number of utility properties in smaller Wisconsin communities during the last year.

GAS FOLK PROFIT BY STOCK GAINS

Thirty-six Who Invested in Securities in 1924-25 See Money Grow

Spokane.—Thirty-six employees of the Spokane Gas and Fuel Company have profits of $11,444.25, or more than $320 each, on stock of the Cities Service Company, the parent organization, bought during 1924 and 1925, according to figures compiled by M. W. Thernes, company secretary of the New York office.

During 1924 company employees bought 298 shares of Cities Service preferred stock, 293 of which cost $68.50 and five of which were sold to them at $70.75, a total of $20,424.25. The market value of these shares today is $27,453.25.

In 1924 the employees bought 18 shares of old issue common at $145 a share, or $2,610. These now have a market value of $4,466.25.

During 1925 employees bought 152 shares of preferred at a total cost of $12,276.75, and these now have a market value of $14,003. Twelve shares of preference B were bought at a cost of $936 and have a market of $991.50 now. Two shares of old issue common were bought at $178 each, or $356, and now have a market value of $496.

Twenty-eight debenture bonds were bought for $99.25, or $2,779, and now are valued on the market at $3,416.

Purchases of all issues in 1925 totaled 194 for $16,347.75, and have a current value of $18,906.

In two years $39,382 in stock was subscribed for by employees and the present market value is $50,826.25.

* * *

Gas for Hilton Village

Newport News, Va.—The Newport News and Hampton Railway, Gas & Electric Company will run its gas mains to Hilton at once, C. D. Porter, vice-president and general manager of the company, announced. The work will cost about $60,000, Mr. Porter said, and will be completed as soon as possible.

Bureau of Mines Has Movie of Natural Gas

Dallas.—"The Story of Natural Gas" is a film which was made by the Natural Gas Association of America in cooperation with the bureau of mines. It is designed to show the processes by which natural gas is brought into the homes and to indicate the methods of procuring this fuel from far beneath the surface of the ground.

The pictures show the whole processes of recovering and distributing natural gas to the homes and factories from the time the location of the well is chosen to the time the gas is turned on to be used, says the Texas public service information bureau.

The picture is approved by the United States Bureau of Mines and is proving very popular in clubs, schools and especially in communities where natural gas is being used for the first time.

The film, for the use of which there is no charge, may be had for showings from the United States Department of Commerce, Bureau of Mines, Pittsburgh, Pa.

* * *

First Degree for Gas Engineering

Baltimore.—One hundred and ten years after the establishment of the first manufactured gas company in the United States, the first university degree in gas engineering was awarded. By a further coincidence, the degree was given in the city, Baltimore, in which the first company started in 1816.

Johns Hopkins University has awarded a degree of Bachelor of Engineering in Gas Engineering to D. T. Bonney, of the class of 1926.

The increasing interest of educational institutions in public utilities is indicated in a recent survey showing that more than a score of universities and colleges are now giving courses dealing with various phases of public utility work.

The demand by utility companies for trained men and the opportunity offered for careers in public service organizations together with the widespread ownership of public utility securities, are the chief causes for the addition of these courses to the curriculum.

New Jersey Gas Association Meeting

Trenton.—The mid-winter meeting of the New Jersey Gas Association will be held on Friday, January 28th, at the Stacey-Trent Hotel. There will be an interesting and lively program that no gas man can afford to miss.

* * *

Initial Dividends on New Columbia Gas

New York.—Initial quarterly dividends of $1.50 per share on the cumulative 6 per cent preferred stock and of $1.25 per share on the no par common stock of Columbia Gas & Electric Corporation (Delaware) were declared by the board of directors of the corporation, resulting from recent consolidation of the Columbia Gas & Electric Company (West Virginia) and the Ohio Fuel Corporation. Both initial quarterly dividends are payable February 15 to stock of record January 20, 1927.

This announcement of dividends is made simultaneously with the issuance of the earnings statement of the corporation and subsidiaries covering the twelve months ended November 30, 1926, showing gross earnings of $92,210,312. Net operating earnings and other income were $35,084,334 after operating expenses, renewals and replacements and taxes. Lease rentals totaled $4,350,987 and fixed charges $4,418,820, leaving net income available for Columbia Gas & Electric Corporation preferred and common dividends of $26,314,527. As preferred dividend requirements are shown as $5,711,088, the statement indicates earnings for the common stock of more than $6.85 per share.

At maturity, January 1, 1927, Columbia Gas & Electric Company (West Virginia) completed the retirement of all of its first mortgage 5 per cent bonds, originally issued in 1907, and its 5 per cent gold debentures, originally issued in 1913, by payment of approximately $11,000,000.

Report of New York State Public Service Commission on Gas Service

Albany.—The report of the New York State Public Service Commission in respect of gas service says:

"Commission inspection, as required by law, has revealed only a few instances where the heating value of gas is not of the proper standard or where the quality was inferior. In these instances poor equipment in the smaller plants has been the cause.

The number of meters tested in the Metropolitan district was 497,450 and in the up-state district 139,728. The law requires that every meter manufactured must be tested and sealed before going into service. The Commission says it has not been able at all times to supply these demands with reasonable promptness because of its force of gas meter testers.

Because of the falling off in natural gas it has been found necessary by some companies in 1926 to augment their supply with manufactured gas.

An increased use of gas for heating homes and buildings is reported by the Commission. This new factor does not seem to be such as to seriously offset the present maximum capacity required of mains or holders, but it is a business which appears to be of a permanent nature.

* * *

Washington May Secure Gas Soon

Opelousas, La.—A proposed ordinance to furnish the city of Washington with gas, either artificial or natural, for heating and cooking purposes, has come before Mayor August Muller and the city council was passed.

In keeping with the progressive policy of the city, the gas ordinance calls for rates that are in keeping with those furnished larger cities. The ordinance calls for the gas to be furnished from a plant located in Opelousas or some other city, one erected in Washington, or the tapping of natural gas whenever possible.

Four Million in City Work Is Scheduled

Bradenton, Fla.—More than $1,000,000 worth of new construction work has been completed by the city. This was part of a program planned at the beginning of 1926, which will total close to $4,000,000. They will be completed this year.

Following is a list of the new construction work of the city, completed during 1926:

Storm and sanitary sewers, $400,000; water system, including tank, $149,000; gas plant, distributing system and service lines, not including meters, shop or supplies, $181,000; paving and sidewalks, $289,000; waterfront, port completed, including docks, etc, $45,000.

Over eight miles of storm sewers were laid; 31 miles sanitary sewers; 28 miles water mains; approximately 125 new fire hydrants; 300 new water meters; 250,000 gallon water tank; 700 foot well; municipal gas plant; 17 miles gas mains; over 2 miles gas service pipes, connecting meters to gas mains; 6 miles new paving within old city limits; 2 miles sidewalks, not including those built by property owners.

The program for 1927 includes the following:

Completion of all projects under present bond issues.

Waterfront improvements to cost over $300,000 for municipal pier; docks; private yacht basin; seawall for several blocks; extension of Main street.

New paving projects approximately $500,000.

Improvement of Jacques creek, $10,000.

Completion of gas and water systems.

Close to $1,000,000 improvements in the newly acquired territory.

GAS COMPANY TO ISSUE NEW BONDS

Has Commission Approval—Will Retire Stock

Boston.—Proposals of the Boston Consolidated Gas Company to issue bonds to the amount of $10,500,000 to retire preferred stock were approved by the public utilities commission.

The issue, which will mature within 20 years, will bear an interest rate of 5 per cent.

The company is now paying 6½ per cent on $6,000,000 of the preferred stock to be retired, and 5½ per cent on $4,000,000 of the preferred. The balance of $500,000 is accounted for by a premium on the stock of $5 a share.

The change from stocks to bonds, the department says, will result in a material saving in interest charges.

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Gas Machinery Co. Receives Contract

San Juan.—The Gas Machinery Company of Cleveland, Ohio, has received contract for two bench fillings for San Juan, Porto Rico.

These bench fillings are with inclined silica retorts and settings, and are to go into the plant which the Gas Machinery Company built complete several years ago.

Bradenton Gas Plant Sale Draws Interest

Bradenton, Fla.—Bradenton's new gas manufacturing plant is attracting a number of capitalists in various sections of the country, who see in it a good investment. Within the past few weeks a number of inquiries have been received.

A telegram was received by City Clerk L. L. Hines from John Reed, Grand Rapids, Mich., who is desirous of sending a man to Bradenton to consult with city officials with a view of purchasing the plant. Due to the fact that the mayor and some of the councilmen are out of the city, the matter is being held in abeyance.

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Whitewell Is Elected Secretary of Gas Firm

Washington, D. C.—George M. Whitewell was elected secretary of the Washington Gas Light Company at a meeting of the board of directors. The board accepted the resignation of the retiring secretary, William B. Crane.

The new secretary has acted as assistant secretary to the company for fifteen years.

City Electrician Hits Gas Rates

Atlanta, Ga.—Declaring that use of gas for lighting forces the Georgia Railway and Power Company to maintain a standard of 575 British thermal units per cubic foot and that this could be reduced to 525 and the same efficiency for heating and cooking be maintained at less cost if gas lighting were discontinued, R. C. Turner, city electrician, recently submitted his annual report to council recommending a cut in the price of gas and telephone service.

Another feature of the report showed that 4,702 electric meters were installed in Atlanta last year —a gain of 33 per cent over those of 1925. He also pointed out that Atanta has become the power center of the south by completion of several projects by the power company in north Georgia.

"Large power lines bring the current to Atlanta and that which is not consumed here is rerouted to the southeastern section of the state," Mr. Turner said.

"The power company has recognized the inefficiency of use of gas for lighting purposes and is now discouraging its use for this. I recommend that the company reduce the thermal unit, if it will agree to slash the price of gas in order to permit more general use of this product for heating and cooking. If the unit is reduced, more by-products can be produced at a less cost also."

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Brooklyn Union's 1926 Appliance Sales

Brooklyn.—It is interesting to note that during the year 1926, 40,951 gas appliances were sold by our department. This is a record of which we all feel proud. These appliances were distributed as follows: 7,349 cookers, 13,222 ranges, 1,455 water heaters, 9,966 gas heaters and 1,110 gas radiators. Builders during the year purchased 128 cookers, 7,595 ranges, 76 water heaters, 23 gas heaters, and 28 gas radiators.

The branch and district sales for the week ending December 31st were: 52 cookers, 115 ranges, 7 water heaters, 156 gas heaters and 14 radiators. Builders bought 7 ranges, 1 cooker and 1 radiator.

Chemists to Visit New Fort Wayne Gas Plant

Hold Regular Meeting of Local Chapter of American Chemical Society January 19

Ft. Wayne.—A visit to the new gas plant of the Northern Indiana Public Service Company will make up the principal program of the regular January meeting of the Fort Wayne chapter of the American Chemical Society, which is to be held Wednesday evening, January 19th, according to Ray Bohn, chief chemist of the Perfection Biscuit Company, who is president of the local group.

A dinner meeting of the chemists will be held at the chamber of commerce prior to the trip through the gas plant. The dinner is scheduled for 6.15. Reservations for the affair are to be made through Miss Pearl Brown, secretary of the local section.

Following the dinner, the chemists will adjourn to the new gas plant of the Public Service Company where they will be addressed by T. J. Kelly, general superintendent of the plant. Mr. Kelly will speak on "The New Fort Wayne Gas Plant." In this talk Mr. Kelly will present an outline of the operation of the plant, the amount of coal consumed, the amount of gas manufactured and the by-products made at the plant through the manufacture of gas| The plant is located at the Wabash railroad and St. Mary's River.

Chemists who do not attend the dinner wil meet at the gas plant office at 8 o'clock, where they will join the main body of the society as they come from the dinner in the chamber of commerce rooms.

Following Mr. Kelly's talk on the operation of the plant, he will conduct the chapter through the plant. Every operation of the plant will be shown and explained to the visitors. The plant will be in operation and the chemists will be give an opportunity to see just how gas is made and what by-products are manufactured in the process.

Cooking Meetings Have Large Attendance

Scranton.—The weekly cooking demonstrations of the Gas Company were resumed on Wednesday with a large attendance of women, keen on once more considering the best methods of preparing wholesome economical meals for their families.

Mrs. McCleary, the director, demonstrated the preparation of Spanish rice and furnished the housewives with recipes for this delectable dish. The director also explained the making of Welsh Rarebit and Vanilla wafers, as well as told her audiences many interesting points of getting the most out of the foods they prepare each day. All women, of Scranton and vicinity are welcome to these cooking lectures which are free and are held each Wednesday.

Gas Firm to Survey Winter Haven Needs

Winter Haven, Fla.—The people of Winter Haven can get modern gas service if they want it. This is the gist of the report from John A. Reed, vice-president of the Iowa Railway and Light Company, Cedar Rapids, Ia., who recently made an investigation of the local field with a view to establishing a gas plant here.

The company will make a house to house canvass to determine the number of families willing to subscribe for the gas service. Should the canvass result satisfactorily, the company will immediately open negotiations for a site and begin erection of a plant of 500,000 cubic feet capacity, which would be large enough to take care of the needs of Winter Haven and surrounding towns.